

Chapter 1

Summary

1.1 Introduction

Cadman, Inc. has applied to King County for a grading permit to develop a gravel mining operation on Grouse Ridge east of North Bend (see Figure 1-1). The proposed mining would occur on two portions of the project site referred to as the “Upper Site” and “Lower Site.” These two portions of the project site, connected by an operational easement that was retained as part of Weyerhaeuser Company’s conveyance of intervening parcels pursuant to the 1998 Middle Fork/Grouse Ridge Memorandum of Understanding (MOU), are a single, contiguous site for permitting purposes.

Cadman, Inc. proposes to excavate about 2.1 million tons of sand and gravel (aggregate) annually on the project site, which would be leased from the owner, the Weyerhaeuser Company. Duration of the project would be approximately 25 years, depending on market demand. Aggregate would be mined first from the 115-acre Lower Site portion (40-acre excavation), which would then be converted to a processing site. Material from the 578-acre Upper Site portion (260-acre excavation) would be moved to the processing facility via a conveyor.

This Final Environmental Impact Statement (FEIS) analyzes the environmental impacts of Cadman, Inc.’s proposal. This FEIS incorporates and updates the analysis in the Draft Environmental Impact Statement (DEIS), and therefore replaces the DEIS.

This FEIS consists of several volumes. This volume, Volume I, includes the FEIS text and figures, with a description of the proposal and alternatives, analysis of environmental impacts, and list of suggested mitigation measures. Volumes II and III include technical reports with supporting information for the analysis in this volume. Volume IV, Comments and Responses, provides responses to public comments on the DEIS. Volumes V and VI contain copies of the comment documents received during the comment period on the DEIS.

This FEIS provides information to the public and King County, the decision-maker, about the environmental impacts of the proposal and alternatives, and mitigation measures that could reduce those impacts. The State Environmental Policy Act (SEPA) grants King County the substantive authority to attach conditions to the project or deny the proposal based on the adverse impacts and significant adverse impacts that cannot be mitigated, as identified in this document. This FEIS does not contain or dictate any decisions whether to approve, condition or deny the proposal.

1.1.1 King County Action

The King County Department of Development and Environmental Services (DDES) is required by law to review and act on the grading permit application submitted by Cadman, Inc. The Department will make its decision on the grading permit following publication of this FEIS. The grading permit is the key permit needed to conduct mining operations. Other required King County permits include conditional use, drainage, septic or sewer system, building, and fire. If a grading permit is approved, periodic mining review would be conducted every 5 years. State and federal agencies also must issue permits for the project. (See the Fact Sheet for a list of permits and agencies).

Cadman, Inc. agreed to preparation of an EIS in order to analyze the environmental impacts of the proposal prior to completing permit review. Following publication of this FEIS, King County will complete its permit review and issue its permit decision. This permit review will include review of detailed designs and engineering studies provided by Cadman, Inc. Final detailed engineering studies and designs are not required for an FEIS under SEPA.

King County activities related to development of the EIS include:

- SEPA Determination of Significance issued on December 9, 1998
- Public scoping workshop conducted on March 10, 1999, at Mount Si High School
- DEIS issued on June 15, 2000
- Public workshop conducted on July 11, 2000, at Mount Si High School
- Sixty-day public comment period, which closed on August 15, 2000
- FEIS issued in December 2001

King County's objectives are to:

- Comply with SEPA
- Comply with legal responsibilities to ensure a fair and reasoned decision regarding the proposal
- Implement the DDES mission, "to serve, educate and protect our community through the implementation of King County's development and environmental regulations"

1.2 Changes between DEIS and FEIS

Changes between the DEIS and FEIS include substantive and document format changes. Some substantive changes reflect additional analysis of impacts as a response to comments. The format changes are reflected in the look and organization of the document.

Substantive changes include:

- The FEIS has been revised to clarify that the terms Upper Site, Lower Site, Upper and Lower Sites, two sites and sites, as used from time to time throughout the document, more precisely refer to the upper and/or lower site portion(s) of the single project site being discussed.
- The alternatives have been renamed to be more descriptive.
- The applicant has removed the freshwater storage pond at the Lower Site portion from the proposal. Water would be stored in an underground vault located beneath the truck parking area at the Lower Site portion. This change to the proposal is reflected in the FEIS. However, the technical reports retain discussion of the freshwater storage pond to reduce the amount of environmental analysis needed in the future should the applicant add the pond to the proposal.
- The project description in Chapter 2, Proposal and Alternatives, has been revised to include a more comprehensive description of the proposal.
- The conveyor corridor discussion in Chapter 3, Soils and Geology, reflects a site reconnaissance across the area that would be traversed by the proposed conveyor.
- A preliminary grading plan for the conveyor and maintenance road has been developed. The impacts of this preliminary plan are analyzed in the FEIS. The analysis in Chapter 12, Aesthetics, Light and Glare, reflects a worst-case scenario. The design for the conveyor and road has not been completed, as it is not required under WAC 197-11-055 (Applicant Review at Conceptual Stage) until specific grading plans are generated.
- Noise levels at additional locations are discussed in Chapter 4, Noise.
- The water quality discussion is expanded in Chapter 6, Water.
- The wetland delineation discussed in Chapter 7, Plants and Animals, confirmed only one, not six, wetlands along SE Grouse Ridge Road.
- The number of residents in the area is discussed in Chapter 9, Land Use.
- New visual simulations and lighting are analyzed in Chapter 12, Aesthetics, Light, and Glare.
- Additional traffic modeling is analyzed in Chapter 14, Transportation.
- Discussion of impacts to environmental health has been expanded and moved to a new chapter, Chapter 15.
- Discussion of impacts to the proposed school site was expanded.

This FEIS has been designed and revised to make it easier to read. Format changes include:

- Titles of chapters and sections are bigger and easier to read.

- Technical discussions for each element of the environment are now in separate chapters, rather than one large chapter. For example, Chapter 3 covers Soils and Geology and Chapter 4 covers Air Quality. The order for the elements of the environment in the DEIS is the same in this FEIS.
- When the environmental impacts of more than one alternative are the same, they are discussed together.
- Impacts related to the Lower Site portion options (i.e., Alternatives 2A and 3A) under Alternatives 2 and 3 are included in the discussion for those alternatives unless they are called out separately.
- The FEIS text contains less technical language and detail than the DEIS. For more technical detail in the environmental analyses, readers can refer to the technical reports in Volumes II and III.
- URS Corporation acquired Dames & Moore during the preparation of the EIS. The document has been revised where appropriate to reflect this.

1.3 Summary of the Proposal and Alternatives

This section provides a brief summary of the proposal and alternatives. Four alternatives and options to two of the alternatives are analyzed in this FEIS. The alternatives analyzed present a range of environmental impacts. Table 1-1 shows the major differences among the alternatives, including sites to be mined, location of processing facility, conveyor, asphalt and concrete plants, and haul routes. The study area for the alternatives, which shows the proposed excavation area and conveyor location, is shown on Figure 1-2. Figures showing each alternative in more detail are provided in Chapter 2, Proposal and Alternatives. The major impacts, mitigation measures, and significant adverse impacts are summarized in Table 1-2 at the back of this chapter.

**Table 1-1
Comparison of Alternatives**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Mining	No	Lower & Upper Site portions	Lower & Upper Site portions	Upper Site portion only
Conveyor	No	Yes	No	No
Underground water vault	No	Yes	Yes	No
Pipeline	No	Yes	Yes	Yes
Processing facilities	None	Lower Site portion	Upper Site portion	Upper Site portion
Aggregate haul route	None	468th Avenue SE to Exit 34	From Lower Site portion, 468th Avenue SE to Exit 34. From Upper Site portion, SE Grouse Ridge Rd to Exit 38. Some aggregate would be hauled to Lower Site portion via Exit 34	SE Grouse Ridge Rd to Exit 38
Asphalt/concrete facilities	None	Lower Site portion	Lower Site portion	None
Asphalt/concrete haul route	None	468th Avenue SE to Exit 34	468th Avenue SE to Exit 34	None
Peak month vehicle trips (one-way trips)	None	998 daily	1,116 daily	938 daily

1.3.1 Alternative 1–No Action

Under this alternative, no sand and gravel mining or processing would occur on the Lower or Upper Sites. Harvesting of trees likely would continue. “No Action” is an alternative used to compare impacts of the proposal with the impacts of existing activities on the site. No Action does not mean that the site will remain as it currently exists.

1.3.2 Alternative 2–Proposal: Lower and Upper Sites Mining - Exit 34

Cadman, Inc. has proposed a gravel operation to mine 2.1 million tons annually of sand and gravel on property leased from Weyerhaeuser Company. The duration of the project is expected to be 25 years, depending on market demand. Cadman, Inc.’s proposal responds to market demand for sand and gravel. Cadman, Inc. has named the following goals for the project:

- Protect the environment.
- Provide for efficient removal of gravel resources for eastern King County needs by mining 40 to 60 million tons.
- Honor commitments made to the Mountains to Sound Greenway Trust.
- Ensure reclamation of the land.

Alternative 2 (the Proposal) is a phased mining plan on two portions of the project site east of North Bend in rural King County, in the Upper Snoqualmie Valley between the Middle and South Forks of the Snoqualmie River (see Figure 1-1). The 115-acre Lower Site portion is at the foot of Grouse Ridge, north of I-90 and east of 468th Avenue SE (Edgewick Road). The Upper Site portion is on Grouse Ridge.

About 40 acres of the Lower Site portion would be excavated, with sand and gravel processed at other locations and sold directly to market. Mining activities would occur within a 1/4-mile of the nearest residential structure. Therefore, King County has determined that a Conditional Use Permit (CUP) would be required. An underground water storage vault supplied by groundwater would be built at the Lower Site portion (the applicant has removed from the proposal the freshwater storage pond that was discussed in the DEIS). After extraction at the Lower Site portion is complete, a processing facility would be built in order to process sand and gravel extracted from 260 acres of the Upper Site portion. Other facilities at the Lower Site portion would include contained fuel storage, an operations office and a vehicle-maintenance building. Concrete and asphalt plants may be built at the Lower Site portion, depending on market conditions and other factors. Products would be hauled from the Lower Site portion via 468th Avenue SE and Exit 34 to I-90.

At both the Upper and Lower Site portions, overburden materials (non-marketable materials such as silt and clay) would be used to build berms for visual and noise buffering. Material from the Upper Site portion would be moved to the processing facility via conveyor. A pipeline along the conveyor alignment would move process water to settling ponds at the Upper Site portion. The Upper Site portion would be mined in 50-acre segments. After a segment is mined, it would be reclaimed in accordance with Washington State law. Weyerhaeuser Company would offer to donate the property to Washington State Department of Natural Resources (WDNR) in trust for King County. The property would be managed as a working forest.

1.3.3 Alternative 2A–Upper Site Mining and Limited Lower Site Mining - Exit 34

Alternative 2A would limit mining of the Lower Site portion to 33.5 acres, rather than 40 acres. An operations/processing plant would encompass 20.1 acres, rather than 25 acres, on the excavated floor. The smaller mining area and operations and processing facility would be at least 1/4 mile from the nearest residence. King County has determined that this distance would eliminate the requirement for a CUP. Other aspects of Alternative 2A would be the same as Alternative 2.

1.3.4 Alternative 3–Lower and Upper Sites Mining - Exits 34 and 38

Under Alternative 3, gravel excavation and development of concrete and asphalt plants at the Lower Site portion would be the same as under Alternative 2. As with Alternative 2, this alternative would require a CUP. Aggregate extracted from the Lower Site portion and concrete and asphalt products would be transported from the site via 468th Avenue SE to Exit 34. The processing facilities would be located at the southeast section of the Upper Site portion. Processed aggregate would be hauled via SE Grouse Ridge Road and Exit 38. Other facilities at the Upper Site portion would include a contained fuel storage, an operations office, a vehicle-maintenance building, a concrete block office, and a lunchroom.

The conveyor would not be built under Alternative 3. If concrete and asphalt plants are built at the Lower Site portion, aggregate would be hauled by truck from the Upper Site portion to Lower Site portion via SE Grouse Ridge Road and Exit 38 to Exit 34 and 468th Avenue SE. A pipeline along the proposed conveyor alignment would transport fresh water from the Lower Site portion underground storage vault to the Upper Site portion for processing operations. Other aspects of this alternative would be similar to those for the Proposal.

1.3.5 Alternative 3A–Upper Site Mining and Limited Lower Site Mining - Exits 34 and 38

Alternative 3A includes the reduced excavation area at the Lower Site portion described above in Alternative 2A and the operations of Alternative 3. The smaller mining area and operations and processing facility would be at least 1/4 mile from the nearest established residence. King County has determined that this distance would eliminate the requirement for a CUP. Other aspects of Alternative 3A would remain the same as those for Alternative 3.

1.3.6 Alternative 4–Upper Site Mining - Exit 38

Under Alternative 4, mining and processing would occur at the Upper Site portion only. Mining activities would be beyond 1/4 mile from the nearest residence. Therefore, King County has determined that a CUP would not be required. The Lower Site portion would not be developed. The conveyor and asphalt and concrete plants would not be built. Aggregate would be hauled via SE Grouse Ridge Road to Exit 38. A water well located on the Lower Site portion would provide the freshwater supply for the Upper Site portion through a pipeline along the conveyor alignment proposed for Alternative 2.

Other facilities would include a contained fuel storage, an operations office, a vehicle-maintenance building, an office, and a lunchroom. Vehicle fueling would take place at the Upper Site portion.

1.4 Significant Areas of Controversy

Mining proposals are often controversial due to the nature of the activity, the disturbance of the land, the potential for impacts, and the length of time the activity would continue. The proposed project has generated questions and comments since it was first announced in 1998.

King County conducted a scoping process to narrow the scope of the EIS, as required under SEPA. Agencies, affected Tribes, and members of the public were invited to comment on the Determination of Significance. The DEIS analysis focused on the environmental issues identified during scoping that King County identified as having potential significant adverse impacts.

Following publication of the DEIS in June 2000, agencies, organizations, and individuals provided comment. King County received 145 comment letters, with approximately 3,500 individual comments. Significant issues of concern identified during the scoping process and the public comment period include visual impacts, effect on groundwater and surface water, impacts to traffic and public safety, effect on air quality and noise, slope stability, land use, water rights, use of biosolids, and property values.

Site portion is farther from nearby residences than the Lower Site portion.

This FEIS identifies the following as significant unavoidable adverse environmental impacts of the Proposal.

- **Soils and geology.** Topography would be altered; sand and gravel resources would be depleted; and slope stability and erosion effects of reclaimed slopes would differ from natural topography.
- **Plants and animals.** Temporary (about 25 years) loss of wildlife habitat would occur: 40 acres at the Lower Site portion; approximately 7 acres along the conveyor alignment; and 260 acres (in 50-acre segments) at the Upper Site portion.
- **Land use.** There would be a temporary (about 25 years) conversion of the project site from forest use.
- **Aesthetics, Light and Glare.** Mining and processing areas and the conveyor alignment would be visible from some view points, particularly higher elevation recreation areas and the Lu residence accessory structure. Light levels would increase in a low light area.

There would be no significant unavoidable adverse impacts under Alternative 1, No Action, due to mining.

Under Alternative 3 (Lower and Upper Site portions mining without a conveyor), significant unavoidable adverse impacts related to activities on the Upper and Lower Site portions would be the same as described above for Alternative 2. However, due to the absence of the conveyor in Alternative 3, significant unavoidable adverse impacts associated with the conveyor would be eliminated. Impacts that would be eliminated along the conveyor alignment include: alteration of topography; slope stability and erosion; temporary loss of wildlife habitat; aesthetics; and temporary conversion of forest use. Alternative 3 would also result in a significant unavoidable adverse increase in noise levels at Olallie State Park due to increased truck traffic. Truck traffic could also cause a significant unavoidable increase in noise at the Fire Training Academy if an alternate access road to the Upper Site portion could not be identified.

The significant unavoidable adverse impacts under Alternative 4 would be less than Alternative 3, because there would be no impacts at the Lower Site portion. This decrease in the area mined would reduce impacts related to depletion of resources, alteration of topography, temporary loss of wildlife habitat, temporary conversion of forest use, aesthetics, and lighting.

1.6 Phased Review

Phased review allows for the analysis of environmental impacts of a proposal in stages. Broader environmental documents are typically followed by narrower documents focusing solely on issues specific to that later analysis. Phased review allows agencies to focus on issues ready

Comments and questions on these and other issues are responded to in Volume IV, Comments and Responses. In addition, some comments have generated new discussion in the FEIS. Some comments, such as those relating to market values of property in the project vicinity, are not directed at the environmental issues associated with this proposal. Therefore, in accordance with WAC 197-11-448, these comments are not addressed as part of the detailed analysis of environmental impacts.

1.5 Impacts and Mitigation Measures

The proposed project, which includes mining of sand and gravel on approximately 300 acres, processing of sand and gravel, possible asphalt and concrete production, and hauling the products to market, would have some impacts on the environment. Land that has previously been cleared of trees would be cleared again and excavated. Wildlife habitat would be disturbed. The project would create impacts to views and cause additional traffic on roads.

A review of the impacts discussed in this FEIS shows that permit conditions and additional mitigation measures would reduce most adverse impacts of the Proposal to below significant levels. SEPA defines significant as “a reasonable likelihood of more than a moderate adverse impact on environmental quality. Significance involves context and intensity (WAC 197-11-330) and does not lend itself to a formula or quantifiable test. The context may vary with the physical setting. Intensity depends on the magnitude and duration of an impact” (WAC 197-11-794). WAC 197-11-655(3)(b) notes that mitigation measures legally adopted by the lead agency “need not be identical to those discussed in the environmental document.” This allows the lead agency flexibility to revise or expand the mitigation presented in the EIS. It is often not possible to anticipate in an EIS every mitigation that will ultimately be required by the responsible jurisdiction.

Table 1-2 lists the construction, operation, cumulative, and significant unavoidable adverse impacts and the mitigation measures for Alternatives 1, 2, 3, and 4. Impacts and mitigation measures for Alternatives 2A and 3A are generally the same or similar to those for Alternatives 2 and 3, respectively, and therefore are not listed in Table 1-2. Under Alternatives 2A and 3A, mining at the Lower Site portion would occur on 33.5 acres, rather than 40 acres, and the processing facilities and plants would be built on 20.1 acres, rather than 25 acres. This would result in slightly less impact to soils and geology, water, plants and animals, energy, land use, and aesthetics. Differences in impacts for Alternatives 2A and 3A compared with Alternatives 2 and 3, respectively, are discussed in Chapters 3 through 15 of this FEIS.

For Alternatives 2, 2A, 3, and 3A, impacts would occur at both the Lower and Upper Site portions, and in the vicinity of the Upper and Lower Site portions. Under Alternative 4, mining would not occur on the Lower Site portion. Therefore, impacts would be limited to the Upper Site portion and in the vicinity of the Upper Site portion. The Upper

for decision and to delay consideration of issues not yet ready for decision.

Phased review is not planned for the North Bend Gravel Operation. However, if Cadman, Inc. changes the Proposal and King County believes the changes are likely to cause new or increased significant adverse environmental impacts not evaluated in this EIS, the County may require additional environmental analysis. For example, if the Proposal changes due to denial of water rights or if large quantities of aggregate are shipped to specific offsite locations for processing, additional environmental analysis may be required. Further review may result in an addendum to this FEIS or a Supplemental EIS.

**TABLE 1-2
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
SOILS AND GEOLOGY				
Construction Impacts	Commercial timber harvesting would result in impacts such as soil erosion.	Construction and improvement of roadways at Lower and Upper Sites	Construction and improvement of roadways at Lower and Upper Sites and along SE Grouse Ridge Road	Construction and improvement of roadways at Upper Site and along SE Grouse Ridge Road
		Reclamation activities	Reclamation activities	Reclamation activities
		Construction of earthen berms	Construction of earthen berms	Construction of earthen berms
		Clearing and preservation of topsoil and woody debris	Clearing and preservation of topsoil and woody debris	Clearing and preservation of topsoil and woody debris
		Construction of a conveyor system with an access road		
Operation Impacts	No impacts	High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading, and soil replacement	High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading, and soil replacement	High potential for erosion and stormwater sedimentation due to excavation, soil stockpiling, reclamation, grading, and soil replacement
		Possible slope stability impact on the west side of Grouse Ridge due to construction of the conveyor system and access road	Potential reduction in stability of the highwall mine at Homestead Mine located along part of the southern boundary due to collection and infiltration of the stormwater and perched groundwater within the Upper Site	Potential reduction in stability of the highwall mine at Homestead Mine located along part of the southern boundary due to collection and infiltration of the stormwater and perched groundwater within the Upper Site
		Potential reduction in stability of the highwall mine at Homestead Mine located along part of the southern boundary due to collection and infiltration of the stormwater and perched groundwater within the Upper Site		
Cumulative Impacts	No impacts	Depletion of regional sand and gravel resource	Depletion of regional sand and gravel resource	Depletion of regional sand and gravel resource
Mitigation Measures Included in Project Design	No mitigation	Reclaimed slopes would be graded to 3H:1V to 4H:1V.	Reclaimed slopes would be graded to 3H:1V to 4H:1V.	Reclaimed slopes would be graded to 3H:1V to 4H:1V.
		Final mine design, including grading plan and design of the conveyor alignment would be reviewed and approved by King County	Final mine design, including grading would be reviewed and approved by King County.	Final mine design, including grading plan would be reviewed and approved by King County.
Additional Recommended Mitigation Measures	No mitigation	Design cut and fill slopes along the conveyor and maintenance road route to ensure slope stability	Stockpile fines generated from site vegetation-clearing and aggregate washing activities and use to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil. The topsoil should be a sufficient thickness to establish a forest.	Stockpile fines generated from site vegetation-clearing and aggregate washing activities and use to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil. The topsoil should be a sufficient thickness to establish a forest.
		Stockpile fines generated from site vegetation-clearing and aggregate washing activities and use to manufacture subsoil, distributed over the surface of the finished mine floor, followed by distribution of the stockpiled organic-rich topsoil. The topsoil should be a sufficient thickness to establish a forest.		
		Utilize construction best management practices to stabilize graded areas, reduce erosion and runoff impacts and contain sediment onsite	Utilize construction best management practices to stabilize graded areas, reduce erosion and runoff impacts and contain sediment onsite	Utilize construction best management practices to stabilize graded areas, reduce erosion and runoff impacts and contain sediment onsite
		Utilize construction best management practices to stabilize graded areas, reduce erosion and runoff impacts and contain sediment onsite	Limit grading and clearing to minimize exposed soils	Limit grading and clearing to minimize exposed soils

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
SOILS AND GEOLOGY (Continued)				
Additional Recommended Mitigation Measures (Continued)	No Mitigation	Limit grading and clearing to minimize exposed soils	Collect surface water runoff in drainage ditches and use culverts, erosion protection and energy dissipating structures (if necessary)	Collect surface water runoff in drainage ditches and use culverts, erosion protection and energy dissipating structures (if necessary)
		Collect surface water runoff in drainage ditches and use culverts, erosion protection and energy dissipating structures (if necessary)		
		Design access roads to the Bonneville Power Administration (BPA) utility towers to meet BPA's requirements. Develop a slope inspection monitoring plan to ensure tower stability		
		Design the Upper Site stormwater and groundwater infiltration system to reduce groundwater flows toward Homestead Mine to reduce landslide hazards		
Significant Unavoidable Adverse Impacts	None	The natural topography would be permanently altered.	The natural topography would be permanently altered.	The natural topography would be permanently altered.
		The natural sand gravel resource of the area would be depleted.	The natural sand gravel resource of the area would be depleted.	The natural sand gravel resource of the area would be depleted.
		Slope stability and erosion effects of the introduced reclaimed slopes would differ from the natural topography.	Slope stability and erosion effects of the introduced reclaimed slopes would differ from the natural topography.	Slope stability and erosion effects of the introduced reclaimed slopes would differ from the natural topography.
AIR QUALITY				
Construction Impacts	Commercial timber harvesting activities would impact air quality temporarily.	Fugitive dust from removal of overburden and building of berms	Fugitive dust from removal of overburden and building of berms	Fugitive dust from removal of overburden and building of berms, although less impact than Alternatives 2 and 3
		Particulate matter emissions from heavy equipment	Particulate matter emissions from heavy equipment	Particulate matter emissions from heavy equipment
		Particulates, CO, and VOCs from the burning of woody debris	Particulates, CO, and VOCs from the burning of woody debris	Particulates, CO, and slightly less VOCs from the burning of woody debris
Operation Impacts	Commercial timber harvesting activities would impact air quality temporarily.	Particulate matter from truck travel on roads, excavation, and processing of aggregate	Particulate matter from truck travel on roads, excavation, and processing of aggregate	Particulate matter from truck travel on roads, excavation, and processing of aggregate
		Particulate matter from concrete plant and asphalt plant emissions	Particulate matter from concrete plant and asphalt plant emissions	Carbon monoxide from truck emissions, heavy equipment engines
		Carbon monoxide from truck emissions, asphalt plant, heavy equipment engines	Carbon monoxide from truck emissions, asphalt plant, heavy equipment engines	Sulfur dioxide and oxides of nitrogen from heavy equipment engines
		Sulfur dioxide and oxides of nitrogen from heavy equipment engines	Sulfur dioxide and oxides of nitrogen from heavy equipment engines	VOCs from diesel engines
		VOCs from diesel engines	VOCs from diesel engines	
		Odors from asphalt plant	Odors from asphalt plant	
Cumulative Impacts	No impacts	Particulate matter	Particulate matter, less than Alternative 2	Particulate matter, less than Alternatives 2 and 3

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
AIR QUALITY (Continued)				
Mitigation Measures Included in Project Design	No mitigation	A tire cleaning system would be installed. Best Available Control Technology (BACT) would be used for the asphalt and concrete plants. Shelter belts of conifer trees would be maintained.	A tire cleaning system would be installed. BACT would be used for the asphalt and concrete plants. Shelter belts of conifer trees would be maintained.	A tire cleaning system would be installed.
Additional Recommended Mitigation Measures	No mitigation	Keep aggregate moist Pave access roads Clean access roads Minimize woody debris to be burned Keep aggregate piles in 3-sided bunkers where feasible Locate processing plant and haul roads as far as possible from residential property	Keep aggregate moist Pave access roads Clean access roads Minimize woody debris to be burned Locate processing plant and haul roads as far as possible from residential property	Keep aggregate moist Pave access roads Clean access roads Minimize woody debris to be burned
Significant Unavoidable Adverse Impacts	None	None	None	None
NOISE				
Construction Impacts	Noise from timber harvesting	Noise from equipment such as bulldozers, bellyscrepers, and front-end loaders at Lower and Upper Sites and along conveyor alignment	Noise from equipment such as bulldozers, bellyscrepers, and front-end loaders at Lower and Upper Sites	Noise from equipment such as bulldozers, bellyscrepers, and front-end loaders at Upper Site
Operation Impacts	Noise from timber harvesting	Noise standard exceedances at nearby residences under worst-case meteorological conditions due to onsite activities Increase in noise levels at Edgewick Inn and at residences south of I-90 due to offsite truck traffic	Noise standard exceedances at nearby residences under worst-case meteorological conditions due to onsite activities Increase in noise levels at Edgewick Inn, Olallie State Park (Exit 38), Fire Training Academy and residences south of I-90 due to offsite truck traffic	No increase in noise levels at nearest residences due to onsite activities Increase in noise levels at Olallie State Park (Exit 38), Fire Training Academy and residences south of I-90 due to offsite truck traffic
Cumulative Impacts	No Impacts	Increase in noise levels at Edgewick Inn and residences south of I-90	Serious increase in noise levels Fire Training Academy and Olallie State Park (Exit 38) Increase in noise levels at Edgewick Inn and residences south of I-90	Serious increase in noise levels Fire Training Academy and Olallie State Park (Exit 38) Increase in noise levels at residences south of I-90
Mitigation Measures Included in Project Design	No mitigation	Standard acoustic backup alarms would be replaced with background noise-sensitive alarms.	Standard acoustic backup alarms would be replaced with background noise-sensitive alarms.	Standard acoustic backup alarms would be replaced with background noise-sensitive alarms.
Additional Recommended Mitigation Measures	None	Orient the asphalt plant so that truck entrances face east and west and the exhaust fan is on the south side of the building	Orient the asphalt plant so that truck entrances face east and west and the exhaust fan is on the south side of the building	Ensure that all construction activities occur between 7 AM and 10 PM weekdays and 9 AM and 10 PM weekends

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
NOISE (Continued)				
Additional Recommended Mitigation Measures (Continued)	None	Maintain a low speed limit within the Lower Site lease area (10 mph) and out to 468th Avenue SE (25 mph)	Maintain a low speed limit (of 10 mph) within the Lower Site lease area and out to 468th Avenue SE (25 mph)	Minimize squeaks and squeals with regular equipment maintenance
		Maintain a smooth road surface	Maintain a smooth road surface	Implement a noise monitoring program to track changes in noise levels
		Ensure that all construction activities occur between 7 AM and 10 PM weekdays and 9 AM and 10 PM weekends	Ensure that all construction activities occur between 7 AM and 10 PM weekdays and 9 AM and 10 PM weekends	Investigate potential for relocating truck route away from classrooms and dormitories at the Fire Training Academy
		Minimize squeaks and squeals with regular equipment maintenance	Minimize squeaks and squeals with regular equipment maintenance	Prohibit hauling of aggregate through Olallie State Park on weekends
		Implement a noise monitoring program to track changes in noise levels	Implement a noise monitoring program to track changes in noise levels	
		Reduce truck trips during nighttime (10 PM to 7 AM) if warranted by monitoring	Reduce truck trips during nighttime (10 PM to 7 AM) if warranted by monitoring	
			Investigate potential for relocating truck route away from classrooms and dormitories at the Fire Training Academy	
	Prohibit hauling of aggregate through Olallie State Park on weekends			
Significant Unavoidable Adverse Impacts	None	None	Noise levels would increase at Olallie State Park (Exit 38) due to truck traffic and at Fire Training Academy if alternate route is not identified.	Noise levels would increase at Olallie State Park (Exit 38) due to truck traffic and at Fire Training Academy if alternate route is not identified.
WATER				
Construction Impacts	Temporary changes in surface water runoff and increased sedimentation and erosion would result from timber harvesting.	Surface Water	Surface Water	Surface Water
		Temporary changes in surface water runoff during construction of access roads and conveyor	Temporary changes in surface water runoff during construction of access roads	Temporary changes in surface water runoff during construction of access roads
		Temporary increase in sedimentation and erosion during construction activity	Temporary increase in sedimentation and erosion during construction activity	Temporary increase in sedimentation and erosion during construction activity
		Groundwater	Groundwater	Groundwater
	No impacts	No impacts	No impacts	
Operation Impacts	No Impacts	Surface Water	Surface Water	Surface Water
		Increased onsite surface water runoff due to new impervious surfaces	Increased onsite surface water runoff due to new impervious surfaces	Increased onsite surface water runoff due to new impervious surfaces
		Increased onsite erosion and sedimentation during mining activities	Increased onsite erosion and sedimentation during mining activities	Increased onsite erosion and sedimentation during mining activities

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
WATER (Continued)				
Operation Impacts (Continued)	No Impacts	Groundwater	Groundwater	Groundwater
		Removal of small, discontinuous perched groundwater zones at the Upper Site reduces available storage for groundwater that feeds springs on flanks of ridge	Removal of small, discontinuous perched groundwater zones at the Upper Site reduces available storage for groundwater that feeds springs on flanks of ridge	Removal of small, discontinuous perched groundwater zones at the Upper Site reduces available storage for groundwater that feeds springs on flanks of ridge
		Increased aquifer recharge due to removal of vegetation at Upper and Lower Sites	Increased aquifer recharge due to removal of vegetation at Upper and Lower Sites	Increased aquifer recharge due to removal of vegetation at Upper Site
		Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs	Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs	Potential changes in spring and stream flow rates on flanks of Grouse Ridge due to changes in aquifer recharge rates and travel time for water to reach springs
		Decrease in groundwater availability beneath Lower Site due to use of groundwater for water supply	Decrease in groundwater availability beneath Lower Site due to use of groundwater for water supply	Decrease in groundwater availability beneath Lower Site due to use of groundwater for water supply
Cumulative Impacts	No Impacts	Surface Water	Surface Water	Surface Water
		Runoff volume and stormwater quality impacts are considered minimal.	Runoff volume and stormwater quality impacts are considered minimal.	Runoff volume and stormwater quality impacts are considered minimal.
		Groundwater	Groundwater	Groundwater
		Groundwater use for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River.	Groundwater use for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River.	Groundwater use for this and other projects in the area could reduce baseflow in the Middle and/or South Fork of the Snoqualmie River.
Mitigation Measures Included in Project Design	No Mitigation	Permanent drainage features and controls would be constructed and maintained as each phase of development occurs	Permanent drainage features and controls would be constructed and maintained as each phase of development occurs	Permanent drainage features and controls would be constructed and maintained as each phase of development occurs
		Completed phases of development would be restored and revegetated in a timely manner	Completed phases of development would be restored and revegetated in a timely manner	Completed phases of development would be restored and revegetated in a timely manner
		A regular groundwater quality monitoring program to assess potential groundwater quality impacts would be implemented	A regular groundwater quality monitoring program to assess potential groundwater quality impacts would be implemented	A regular groundwater quality monitoring program to assess potential groundwater quality impacts would be implemented
Additional Recommended Mitigation Measures	No Mitigation	Surface Water	Surface Water	Surface Water
		Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations	Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations	Inspect temporary erosion and sedimentation controls and adjust on a daily basis to match site conditions and operations
		Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures	Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures	Routinely inspect and maintain permanent erosion, sedimentation, and water quality controls according to established policies and procedures
		Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project	Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project	Implement long-term surface water monitoring program for construction, operation, and post-closure phases of project

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
WATER (Continued)				
Additional Recommended Mitigation Measures (Continued)	No Mitigation	Groundwater	Groundwater	Groundwater
		Locate infiltration ponds on Upper Site as close as possible to areas where water is collected and above perching layers to provide flow to springs	Locate infiltration ponds on Upper Site as close as possible to areas where water is collected and above perching layers to provide flow to springs	Locate infiltration ponds on Upper Site as close as possible to areas where water is collected and above perching layers to provide flow to springs
		Design infiltration ponds to filter out suspended silt and clay	Design infiltration ponds to filter out suspended silt and clay	Design infiltration ponds to filter out suspended silt and clay
		Conduct periodic maintenance to optimize infiltration pond function	Conduct periodic maintenance to optimize infiltration pond function	Conduct periodic maintenance to optimize infiltration pond function
		Control surface water runoff at the base of the excavation on the Upper Site with berms	Control surface water runoff at the base of the excavation on the Upper Site with berms	Control surface water runoff at the base of the excavation on the Upper Site with berm.
		Restrict excavation in the easternmost portion of the Lower Site to periods when a 10-foot buffer zone is maintained	Restrict excavation in the easternmost portion of the Lower Site to periods when a 10-foot buffer zone is maintained	Avoid excavation at the Upper Site within 5 feet of shallow perching zone
		Conduct regular inspections and maintenance of the groundwater seepage interception trench at the Lower Site to ensure it functions properly	Conduct regular inspections and maintenance of the groundwater seepage interception trench at the Lower Site to ensure it functions properly	Cease excavation in areas of the Upper Site where groundwater is seasonally encountered above an elevation of 1,540 feet above msl until water level has dropped to maintain 5-foot buffer zone and precautions are taken to control the flow of water and protect water quality
		Install a shallow piezometer adjacent to the groundwater interception trench to confirm that a 5-foot buffer zone is maintained at the Lower Site	Install a shallow piezometer adjacent to the groundwater interception trench to confirm that a 5-foot buffer zone is maintained at the Lower Site	
		In the event that the trench does not maintain an adequate buffer zone at the Lower Site, active dewatering should be required (i.e., pumping)	In the event that the trench does not maintain an adequate buffer zone at the Lower Site, active dewatering should be required (i.e., pumping)	
		Operations should cease and mobile equipment should be removed from any portion of Lower Site where a 5-foot buffer zone cannot be maintained	Operations should cease and mobile equipment should be removed from any portion of Lower Site where a 5-foot buffer zone cannot be maintained	Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers
		Avoid excavation at the Upper Site within 5 feet of Shallow Perching Zone	Avoid excavation at the Upper Site within 5 feet of Shallow Perching Zone	Conduct a detailed groundwater investigation on Upper Site in the area of the permanent processing facility. A 5- to 10-foot buffer zone should be maintained in this area.
		Cease excavation in areas of the Upper Site where groundwater is seasonally encountered above an elevation of 1,540 feet above msl until water has dropped to maintain a 5-foot buffer zone and precautions are taken to control the flow of water and protect water quality	Cease excavation in areas of the Upper Site where groundwater is seasonally encountered above an elevation of 1,540 feet above msl until water level has dropped to maintain 5-foot buffer zone and precautions are taken to control the flow of water and protect water quality	Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers
		Collect water level data from the existing and proposed wells at the Lower Site to confirm direction of groundwater flow	Collect water level data from the existing and proposed wells at the Lower Site to confirm direction of groundwater flow	Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations
		Install a monitoring well or wells on the Lower Site downgradient of the process area if proposed well is not located downgradient	Install a monitoring well or wells on the Lower Site downgradient of the process area if proposed well is not located downgradient	Collect additional spring and stream flow measurements prior to construction to provide baseline data

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
WATER (Continued)				
Additional Recommended Mitigation Measures (Continued)	No mitigation	Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers	Collect additional groundwater level data seasonally at the Upper Site, prior to construction, to further assess potential interception of the perched aquifers	Collect and analyze water sample from selected springs to provide baseline data.
		Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations	Conduct a detailed groundwater investigation on Upper Site in the area of the permanent processing facility. A 5- to 10-foot buffer zone should be maintained in this area	Following construction, conduct regular, periodic observations and measurements of the spring and steam flow
		Collect additional spring and stream flow measurements prior to construction to provide baseline data	Maintain the wells on the Upper Site installed above the shallow perching layer and monitor the water levels in these wells during site operations	Locate, construct, and operate the water supply well to minimize interference with water levels in nearby water supply wells
		Collect and analyze water quality samples from selected springs to provide baseline data	Collect additional spring and stream flow measurements prior to construction to provide baseline data	Retire or transfer existing water rights to minimize impacts to water resources in the basin
		Following construction, conduct regular, periodic observations and measurements of the spring and steam flow	Collect and analyze water samples from selected springs to provide baseline data	Prepare a contingency water supply plan to provide high-quality water to Sallal Water Association in the event of water quality or water quantity impacts due to the gravel operation
		Locate, construct, and operate the water supply well to minimize interference with water levels in nearby water supply wells	Following construction, conduct regular, periodic observations and measurements of the spring and steam flow	
		Retire or transfer existing water rights to minimize impacts to water resources in the basin	Locate, construct, and operate the water supply well to minimize interference with water levels in nearby water supply wells	
		Prepare a contingency water supply plan to provide high-quality water to Sallal Water Association in the event of water quality or water quantity impacts due to the gravel operation	Retire or transfer existing water rights to minimize impacts to water resources in the basin. Prepare a contingency water supply plan to provide high-quality water to Sallal Water Association in the event of water quality or water quantity impacts due to the gravel operation	
Significant Unavoidable Adverse Impacts	None	None	None	None

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
PLANTS AND ANIMALS				
Construction Impacts	Plant and animal habitat would be affected by timber harvesting	Temporary noise increase due to construction	Temporary noise increase due to construction	Temporary noise increase due to construction
			Potential impacts to riparian, aquatic habitat, and wetlands during road construction	Potential impacts to riparian, aquatic habitat, and wetlands during road construction
Operation Impacts	Plant and animal habitat would be affected by timber harvesting	Temporary loss of wildlife habitat at the Lower and Upper Sites and along conveyor alignment	Temporary loss of wildlife habitat at the Lower and Upper Sites	Temporary loss of wildlife habitat at the Upper Site
		Elk and deer foraging on residential landscaping may increase	Elk and deer foraging on residential landscaping may increase	Increased competition for habitat from displaced wildlife
		Increased competition for habitat from displaced wildlife	Increased competition for habitat from displaced wildlife	Potential release of sediment into streams due to instream construction at 12 stream crossings
		Increased noise levels from mining operations	Potential release of sediment into streams due to instream construction at twelve stream crossings	Permanent loss of riparian habitat and reduced recruitment of large woody debris to 12 stream channels due to road construction
		Excavation may modify discharge from perched aquifers at the Upper Site	Permanent loss of riparian habitat and reduced recruitment of large woody debris to twelve stream channels due to road construction	Increased noise levels from mining operations
			Increased noise levels from mining operations	Excavation may modify discharge from perched aquifers at the Upper Site
			Excavation may modify discharge from perched aquifers at the Upper Site	Loss of potential spotted owl habitat adjacent to SE Grouse Ridge Road
			Loss of potential spotted owl habitat adjacent to SE Grouse Ridge Road	
Cumulative Impacts	No impacts	May alter flows of two streams on Upper Site	May alter flows of two streams on Upper Site	May alter flows of two streams on Upper Site
			Instream work at twelve tributaries of the South Fork of the Snoqualmie River (multiple sources of sediment discharge to river)	Instream work at twelve tributaries of the South Fork of the Snoqualmie River (multiple sources of sediment discharge to river)
Mitigation Measures Included in Project Design	No mitigation	Topsoil would be salvaged before mining begins.	Topsoil would be salvaged before mining begins.	Topsoil would be salvaged before mining begins.
		Reducing depth of excavation to elevation 1540 feet above mean sea level on the Upper Site would decrease impacts on perched aquifers that feed small tributary streams in adjacent areas.	Reducing depth of excavation to elevation 1540 feet above mean sea level on the Upper Site would decrease impacts on perched aquifers that feed small tributary streams in adjacent areas.	Reducing depth of excavation to elevation 1540 feet above mean sea level on the Upper Site would decrease impacts on perched aquifers that feed small tributary streams in adjacent areas.
Additional Recommended Mitigation Measures	No mitigation	Protect and actively manage portions of site not being mined.	Protect and actively manage portions of site not being mined.	Protect and actively manage portions of site not being mined.

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
PLANTS AND ANIMALS (Continued)				
Additional Recommended Mitigation Measures (Continued)	No mitigation	Use stockpiled top soil, woody debris and variety of plant species during reclamation. Forage areas for deer and elk should also be planted.	Use stockpiled top soil, woody debris and variety of plant species during reclamation. Forage areas for deer and elk should also be planted.	Use stockpiled top soil, woody debris and variety of plant species during reclamation. Forage areas for deer and elk should also be planted.
		Return Upper and Lower Sites to original use of timber production and actively manage to improve forest health and wildlife habitat	Return Upper and Lower Sites to original use of timber production and actively manage to improve forest health and wildlife habitat	Return Upper Site to original use of timber production and maintain Lower Site and actively manage to improve forest health and wildlife habitat
		Prohibit clearing during the nesting season to minimize the loss of bird nests, eggs, or juveniles	Prohibit clearing during the nesting season to minimize the loss of bird nests, eggs, or juveniles	Prohibit clearing during the nesting season to minimize the loss of bird nests, eggs, or juveniles
			Road widening to follow BMPs and standards, and guidelines at stream crossings to minimize impacts on the aquatic environment	Road widening to follow BMPs and standards, and guidelines at stream crossings to minimize impacts on the aquatic environment
			Limit road widening to avoid wetland	Limit road widening to avoid wetland
			Compensate for all impacts to wetlands that cannot be avoided in accordance with King County Code.	Compensate for all impacts to wetlands that cannot be avoided in accordance with King County Code.
Significant Unavoidable Adverse Impacts	None	There would be a temporary loss of 40 acres of wildlife habitat at the Lower Site.	There would be a temporary loss of 40 acres of wildlife habitat at the Lower Site.	There would be a temporary loss of 260 acres (in 50-acre segments) of wildlife habitat at the Upper Site.
		There would be a temporary loss of 7 acres of wildlife habitat along the conveyor alignment.	There would be a temporary loss of 260 acres (in 50-acre segments) of wildlife habitat at the Upper Site.	
		There would be a temporary loss of 260 acres (in 50-acre segments) of wildlife habitat at the Upper Site.		
ENERGY				
Construction Impacts	No impacts	Construction/enhancement of roadways	Construction/enhancement of roadways	Construction/enhancement of roadways
		Construction of buildings and a conveyor system	Construction of buildings	Construction of buildings
		Construction of processing facilities	Construction of processing facilities	Construction of processing facilities
		Clearing of trees and vegetation	Clearing of trees and vegetation	Clearing of trees and vegetation
		Maintenance activities	Maintenance activities	Maintenance activities
		Reclamation activities	Reclamation activities	Reclamation activities
		Providing electrical service to the site	Providing electrical service to the site	Providing electrical service to the site
		Developing power quality control measures	Developing power quality control measures	Developing power quality control measures
		Installment of a well for the Site's water supply	Installment of a well for the Site's water supply	Installment of a well for the Site's water supply
Operation Impacts	No impacts	Electrical	Electrical	Electrical
		Increased electrical load due to site activity	Increased electrical load due to site activity, slightly less than for Alternative 2	Increased electrical load due to site activity, slightly less than for Alternatives 2 and 3
		Power quality impact associated with non-linear loading by processing equipment	Power quality impact associated with non-linear loading by processing equipment	Power quality impact associated with non-linear loading by processing equipment

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
ENERGY (Continued)				
Operation Impacts (Continued)	No impacts	Fuel	Fuel	Fuel
		Onsite operation of heavy construction equipment	Onsite operation of heavy construction equipment	Onsite operation of heavy construction equipment
		Transportation of gravel, concrete, and asphalt products	Transportation of gravel, concrete, and asphalt products	Transportation of gravel
		Workers commuting to and from site	Workers commuting to and from site	Workers commuting to and from site
		Fuel storage/usage for heavy construction equipment during site operations	Fuel storage/usage for heavy construction equipment during site operations	Fuel storage/usage for heavy construction equipment during site operations
		Fuel storage/usage for processing facilities	Fuel storage/usage for processing facilities	Fuel storage/usage for processing facilities
		Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 16% over I-90's current energy usage per mile of transportation	Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 36% over I-90's current energy usage per mile of transportation	Incremental increase in energy consumption from trucks/vehicles associated with gravel extraction operations of 26% over I-90's current energy usage per mile of transportation
Cumulative Impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures Included in Project Design	No mitigation	No mitigation	No mitigation	No mitigation
Additional Recommended Mitigation Measures	No mitigation	Electrical	Electrical	Electrical
		Develop power quality controls for major electrically-powered equipment	Develop power quality controls for major electrically-powered equipment	Develop power quality controls for major electrically-powered equipment
		Use centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Use centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Use centralized power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation
		Design the conveyor system to generate and harness power for site use	Use variable frequency drive motors or best available technology for the asphalt batch plant to prevent a large voltage drop when the motors are started	
		Use variable frequency drive motors or best available technology for the asphalt batch plant to prevent a large voltage drop when the motors are started	Size transformers to handle the voltage drop as well as the working load, and should be as close as possible to each service point	
		Size transformers to handle the voltage drop as well as the working load, and should be as close as possible to each service point	Size wire gauge to maximize voltage to the motors	
		Size wire gauge to maximize voltage to the motors		

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**


	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
ENERGY (Continued)				
Additional Recommended Mitigation Measures (Continued)	No mitigation	Fuel	Fuel	Fuel
		Improve fuel efficiency for specific transport vehicles	Improve fuel efficiency for specific transport vehicles	Improve fuel efficiency for specific transport vehicles
		Improve roads for more efficient transportation	Improve roads for more efficient transportation	Improve roads for more efficient transportation
		Optimize transportation methods and routes	Optimize transportation methods and routes	Optimize transportation methods and routes
		Encourage carpooling (passenger vehicles only)	Encourage carpooling (passenger vehicles only)	Encourage carpooling (passenger vehicles only)
Significant Unavoidable Impacts	None	None	None	None
LAND USE				
Construction Impacts	Timber harvesting impacts would be similar to clearing prior to mining	Phased clearing and construction would increase levels of noise, dust, and truck traffic. Construction activities would be short-term.	Overall construction conditions are similar to Alternative 2. Noise, dust, and traffic associated with construction of aggregate processing facility transferred from Lower to Upper Site	Construction impacts limited to Upper Site. Overall impacts would be less than those identified for Alternative 2.
Operation Impacts	Future timber harvesting likely	Temporary conversion of a portion of the sites to sand and gravel mining. Existing forestry and informal recreational uses foreclosed during mining. Intensity of mining use greater than residential uses to the immediate north. Indirect spin-off impacts not anticipated.	Land use impacts generally similar to Alternative 2. A portion of activity transferred to the Upper Site.	Mining conditions on Upper Site similar to those identified for Alternative 2.
Cumulative Impacts	No impacts	No impacts.	No impacts.	No impacts.
Mitigation Measures Included in Project Design		Mining would be phased.	Mining would be phased.	Mining would be phased.
		A natural buffer would be provided around the perimeter of the sites.	A natural buffer would be provided around the perimeter of the sites.	A natural buffer would be provided around the perimeter of the sites.
		Reclamation would occur following conclusion of mining activities.	Reclamation would occur following conclusion of mining activities.	Reclamation would occur following conclusion of mining activities.
Additional Recommended Mitigation Measures	No mitigation	Minimize dust and noise levels	Minimize dust and noise levels	Minimize dust and noise levels
Significant Unavoidable Impacts	None	Proposal would result in the temporary conversion of forest use.	Alternative 3 would result in the temporary conversion of forest use.	Alternative 4 would result in the temporary conversion of forest use.

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES				
Construction Impacts	No impacts	No impacts	No impacts	No impacts
Operation Impacts	No impacts	No impacts	No impacts	No impacts
Cumulative Impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures Included in Project Design	No mitigation	No mitigation ■	No mitigation ■	No mitigation
Additional Recommended Mitigation Measures	No mitigation	Conduct additional field investigations as project areas are cleared of vegetation	Conduct additional field investigations as project areas are cleared of vegetation	Conduct additional field investigations as project areas are cleared of vegetation
		Train construction/operation crews to recognize potential archaeological sites	Train construction/operation crews to recognize potential archaeological sites	Train construction/operation crews to recognize potential archaeological sites
		In the case of an unanticipated discovery, halt ground-disturbing activities until a qualified archaeologist, with assistance from the Office of Archaeology and Historic Preservation, King County Office of Cultural Resources, and local Native American groups can evaluate the significance of the find	In the case of an unanticipated discovery, halt ground-disturbing activities until a qualified archaeologist, with assistance from the Office of Archaeology and Historic Preservation, King County Office of Cultural Resources, and local Native American groups can evaluate the significance of the find	In the case of an unanticipated discovery, halt ground-disturbing activities until a qualified archaeologist, with assistance from the Office of Archaeology and Historic Preservation, King County Office of Cultural Resources, and local Native American groups can evaluate the significance of the find
Significant Unavoidable Impacts	None	None	None	None
RECREATION				
Construction Impacts	Timber harvesting impacts similar to clearing prior to mining	Visual impacts from offsite recreational areas due to phased clearing and construction of processing facilities at the Lower and Upper Sites and along the conveyor alignment	Visual impacts from offsite recreational areas due to phased clearing and construction of processing facilities at the Lower and Upper Sites	Visual impacts from offsite recreational areas due to phased clearing and construction of processing facilities at the Upper Site
Operation Impacts	Potential for unauthorized public recreational use	Delays to persons traveling to recreational facilities in the Lower Site vicinity due to Increase in traffic on 468th Avenue SE and at Exit 34	Delays to persons traveling to recreational facilities in the Lower Site vicinity due to Increase in traffic on 468th Avenue SE and at Exit 34 similar to, but slightly less than, Alternative 2	Increased levels of noise and dust due to truck traffic on Homestead Valley Road and conflict with pedestrian, bicycle and vehicle movements in proximity to Olallie State Park, including at the park entrance

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
RECREATION (Continued)				
Operation Impacts (Continued)	Potential for unauthorized public recreational use	Minor increase in demand for recreational facilities from employees working at the gravel operation	Increased levels of noise and dust due to truck traffic on Homestead Valley Road and conflict with pedestrian, bicycle and vehicle movements in proximity to Olallie State Park, including at the park entrance	Minor increase in demand for recreational facilities from employees working at the gravel operation
		Change in visual character of area of Upper and Lower Sites and conveyor alignment as viewed from offsite recreational facilities	Minor increase in demand for recreational facilities from employees working at the gravel operation	Change in visual character of area of Upper Site as viewed from offsite recreational facilities.
			Change in visual character of area of Upper and Lower Sites as viewed from offsite recreational facilities.	
Cumulative Impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures Included in Project Design	No mitigation	A natural buffer would be provided around the perimeter of the Lower and Upper Sites.	A natural buffer would be provided around the perimeter of the Lower and Upper Sites.	A natural buffer would be provided around the perimeter of the Upper Site.
Additional Recommended Mitigation Measures	No mitigation	See Noise section of this table for noise mitigation measures	See Noise section of this table for noise mitigation measures	See Noise section of this table for noise mitigation measures
		See Transportation section of this table for traffic mitigation measures	See Transportation section of this table for traffic mitigation measures	See Transportation section of this table for traffic mitigation measures
		See Air Quality section of this table for air quality mitigation measures	See Air Quality section of this table for air quality mitigation measures	See Air Quality section of this table for air quality mitigation measures
Significant Unavoidable Impacts	None	None	None	None
AESTHETICS, LIGHT, AND GLARE				
Construction Impacts	Timber harvesting impacts would be similar to clearing prior to mining.	Visual impacts due to cleared areas on the Lower and Upper sites and conveyor alignment from certain viewpoints	Visual impacts due to cleared areas on the Lower and Upper Sites from certain viewpoints	Visual impacts due to cleared areas at the Upper Site from certain viewpoints
		Potential increase in lighting levels during construction of processing facilities on the Lower Site	Potential increase in lighting levels during construction of processing facilities on the Lower Site	Visual impacts due to exposed mining areas and processing facilities on the Upper Site from certain viewpoints
Operation Impacts	Future forestry activities would be visible from certain areas.	Visual impacts due to exposed mining areas, the conveyor alignment, and processing facilities from certain viewpoints	Visual impacts due to exposed mining areas and processing facilities from certain viewpoints	

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
AESTHETICS, LIGHT, AND GLARE (Continued)				
Operation Impacts (Continued)	Future forestry activities would be visible from certain areas.	Mining and processing would generate dust and steam. If woody debris is burned during clearing, smoke would be generated.	Mining and processing would generate dust and steam. If woody debris is burned during clearing, smoke would be generated.	Mining and processing would generate dust at the Upper Site. If woody debris is burned during clearing, smoke would be generated.
		Mining and processing would provide new light sources in the area. Proposal would increase sources of glare	Increased sources of light and glare increased on the Upper Site compared with Alternative 2	Sources of light and glare would be less than for Alternatives 2 and 3.
Cumulative Impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures Included in Project Design	No mitigation	Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year.	Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year.	Mining would be phased. Upon completion of mining within an individual phase, the mined area would be reclaimed, thus limiting the amount of mining activity during any given year.
		A naturally vegetated buffer would be retained around the perimeter of the Lower and Upper Sites to buffer nearby residential uses from mining and processing activities.	A naturally vegetated buffer would be retained around the perimeter of the Lower and Upper Sites to buffer nearby residential uses from mining and processing activities.	A naturally vegetated buffer would be retained around the perimeter of the Upper Site to buffer nearby residential uses from mining and processing activities.
		Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining.	Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining.	Mining on the Upper Site would be conducted below the existing rim of Grouse Ridge to minimize views to mining.
		Vegetated view screening berms would be provided along portions of the northern and southern sides of the mining area on the Lower Site.	Vegetated view screening berms would be provided along portions of the northern and southern sides of the mining area on the Lower Site.	Reclamation activities would include slope stabilization, topsoil placement and revegetation.
		The proposed conveyor between the Lower and Upper Sites would be enclosed in a low-reflective, natural-colored material to minimize visual and glare impacts.	Reclamation activities would include slope stabilization, topsoil placement; and revegetation.	
		Reclamation activities would include slope stabilization, topsoil placement, and revegetation.		
		Additional Recommended Mitigation Measures	No mitigation	Meet the specifications of the U.S. National Park Service Interim Design Guidelines for Outdoor Lighting
Develop building lighting on high structures and direct lighting toward the ground	Develop building lighting on high structures and direct lighting toward the ground			Develop building lighting on high structures and direct lighting toward the ground
Independently mount lighting to throw light downward	Independently mount lighting to throw light downward			Independently mount lighting to throw light downward

**TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS**

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
AESTHETICS, LIGHT, AND GLARE (Continued)				
Significant Unavoidable Impacts	None	Mining activity, clearing associated with the conveyor alignment, and processing would be visible from some view points, particularly higher elevation recreation areas and the Lu Residence accessory structure.	Mining activity and processing would be visible from some view points, particularly higher elevation recreation areas and the Lu Residence accessory structure.	Mining activity and processing would be visible from some view points, particularly higher elevation recreation areas.
		The Proposal would increase light levels in a low light area.	Alternative 3 would increase light levels in a low light area.	Alternative 4 would increase light levels in a low light area.
PUBLIC SERVICES AND UTILITIES				
Construction Impacts	No impacts	Minor increase in emergency services	Minor increase in emergency services	Minor increase in emergency services
Operation Impacts	No impacts	Public Services	Public Services	Public Services
		Minor increase in emergency services	Minor increase in emergency services	Minor increase in emergency services
		Risk of vehicle accidents and slower response times	Risk of vehicle accidents and slower response times	Risk of vehicle accidents and slower response times
		Emergency operations unique to gravel operations	Emergency operations unique to gravel operations	Emergency operations unique to gravel operations
		Electrical	Electrical	Electrical
		Dedicated lines from Puget Sound Energy or Tanner Electric Company substation	Dedicated lines from Puget Sound Energy or Tanner Electric Company substation	Dedicated lines from Puget Sound Energy or Tanner Electric Company substation
		Relocation of existing power line in the Upper Site during development	Relocation of existing power line in the Upper Site during development	Relocation of existing power line in the Upper Site during development
		Quality concerns associated with non-linear loading by processing equipment	Quality concerns associated with non-linear loading by processing equipment	Quality concerns associated with non-linear loading by processing equipment
		Fuel	Fuel	Fuel
		Existing local natural gas distribution system cannot meet project demand	Existing local natural gas distribution system cannot meet project demand	Reduced impacts related to fuel use for Alternative 4 than Alternatives 2 and 3 because the asphalt batch plant would not be built
		Alternative fuels such as propane gas or diesel fuel require onsite storage and truck delivery	Alternative fuels such as propane gas or diesel fuel require onsite storage and truck delivery	
		Telecommunications	Telecommunications	Telecommunications
		AT&T/WorldCom fiber-optic cable would be relocated from the Upper and Lower sites prior to commencement of site work.	AT&T/WorldCom fiber-optic cable would be relocated from the Upper and Lower sites prior to commencement of site work.	AT&T/WorldCom fiber-optic cable would be relocated from the Upper and Lower sites prior to commencement of site work.
		Water	Water	Water
		Process water demand exceeds capacity of existing utility sources	Process water demand exceeds capacity of existing utility sources	Process water demand exceeds capacity of existing utility sources
Operations require development of additional onsite sources (groundwater) or offsite sources (truck or piping from other suppliers)	Operations require development of additional onsite sources (groundwater) or offsite sources (truck or piping from other suppliers)	Operations require development of additional onsite sources (groundwater) or offsite sources (truck or piping from other suppliers)		

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
PUBLIC SERVICES AND UTILITIES (Continued)				
Operation Impacts (Continued)	No Impacts	Sanitary Sewer	Sanitary Sewer	Sanitary Sewer
		Septic system (septic tank and leachfield) or portable facilities at the Lower Site and portable facilities only at the Upper Site	Septic system (septic tank and leachfield) or portable facilities at the Lower Site and portable facilities only at the Upper Site	Portable facilities at Upper Site
		Stormwater	Stormwater	Stormwater
		Stormwater interception and infiltration is planned	Stormwater interception and infiltration is planned	Stormwater interception and infiltration is planned
Cumulative Impacts	No impacts	Relocation of existing underground power distribution line and fiber-optic cable could result in temporary disruption of existing services.	Relocation of existing underground power distribution line and fiber-optic cable could result in temporary disruption of existing services.	Relocation of existing underground power distribution line and fiber-optic cable could result in temporary disruption of existing services.
Mitigation Measures Included in Project Design	No mitigation	No mitigation ■	No mitigation ■	No mitigation
Additional Recommended Mitigation Measures	No mitigation	Public Services	Public Services	Public Services
		Fence the site in appropriate locations and provide security services	Fence the site in appropriate locations and provide security services	Fence the site in appropriate locations and provide security services
		Provide specialized equipment onsite and train staff for unique emergency situations	Provide specialized equipment onsite and train staff for unique emergency situations	Provide specialized equipment onsite and train staff for unique emergency situations
		Electrical	Electrical	Electrical
		Have power controls for major electrically-powered equipment	Have power controls for major electrically-powered equipment	Have power controls for major electrically-powered equipment
		Centralize power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Centralize power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation	Centralize power conditioning within the development area, or separate power feeds and power quality controls originating at the power substation
		Use variable frequency drive motors to prevent a large voltage drop when the motors at the asphalt batch plant are started	Use variable frequency drive motors to prevent a large voltage drop when the motors at the asphalt batch plant are started	Size the wire gauge to maximize voltage to the motors
		Size the transformers to handle the voltage drop as well as the working load, and be as close as possible to each service point	Size the transformers to handle the voltage drop as well as the working load, and be as close as possible to each service point	Ensure cooperation between Cadman, Inc. and the power supplier to address power quality
		Size the wire gauge to maximize voltage to the motors	Size the wire gauge to maximize voltage to the motors	
		Ensure cooperation between Cadman, Inc. and the power supplier to address power quality	Ensure cooperation between Cadman, Inc. and the power supplier to address power quality	
		Fuel	Fuel	Fuel
		All applicable regulations should be followed	All applicable regulations should be followed	All applicable regulations should be followed

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
PUBLIC SERVICES AND UTILITIES (Continued)				
Additional Recommended Mitigation Measures (Continued)	No mitigation	Telecommunications	Telecommunications	Telecommunications
		Relocate fiber-optic cable so that communication services are not interrupted, if necessary	Relocate fiber-optic cable so that communication services are not interrupted, if necessary	Relocate fiber-optic cable so that communication services are not interrupted, if necessary
		Water	Water	Water
		Incorporate water-saving practices into operations to minimize water use	Incorporate water-saving practices into operations to minimize water use	Incorporate water-saving practices into operations to minimize water use
		Fully evaluate quality and availability of water	Fully evaluate quality and availability of water	Fully evaluate quality and availability of water
Significant Unavoidable Impacts	None	None	None	None
TRANSPORTATION				
Construction Impacts	No mining impacts. Logging trucks from timber harvesting activities would temporarily increase traffic.	Temporary construction traffic at Lower Site	Temporary construction traffic at Lower Site	Construction traffic on SE Homestead Valley Road and SE Grouse Ridge Road
		Slowing and stopping of existing traffic on 468th Street SE in the construction zone	Slowing and stopping of existing traffic on 468th Avenue SE in the construction zone	Disruption to traffic along SE Grouse Ridge Road
			Construction traffic on SE Homestead Valley Road and SE Grouse Ridge Road	
			Disruption to traffic along SE Grouse Ridge Road	
Operation Impacts	I-90 off-ramp at 468th Avenue SE (Exit 34) to experience delays. Congestion would be expected along 468th Avenue SE	Four intersections impacted along 468th Avenue SE, especially at Exit 34 and SE 146th Street.	Four intersections impacted along 468th Avenue SE, especially at Exit 34 and SE 146th Street.	Additional traffic on Homestead Valley and SE Grouse Ridge Roads
		Turning conflicts at SE 146th Street and 468th Avenue SE	Turning conflicts at SE 146th Street and 468th Avenue SE	Traffic safety impacts due to bottlenecks at bridge and road hazards along SE Grouse Ridge Road
		Impacts on pedestrian and bicycle travel and traffic near Lower Site	Impacts on pedestrian and bicycle travel and traffic near the Lower Site and on SE Homestead Valley Road	Impacts on pedestrian and bicycle travel and traffic on SE Homestead Valley Road
			Additional traffic on Homestead Valley and SE Grouse Ridge Roads	
			Traffic safety impacts due to bottlenecks at bridge and road hazards along SE Grouse Ridge Road	
Cumulative Impacts	No impacts	Accelerate need to improve 468th Avenue SE from I-90 to SE 146th Street	Accelerate need to improve SE Homestead Valley Road	Accelerate need to improve SE Homestead Valley Road
Mitigation Measures Included in Project Design	No mitigation	468th Avenue SE would be widened to 3 lanes from I-90 eastbound ramps to SE 146th Street.	468th Avenue SE would be widened to 3 lanes from I-90 eastbound ramps to SE 146th Street.	No mitigation
		An 8-foot-wide paved shoulders or curb, gutter and sidewalk would be constructed along 468th Avenue SE from the I-90 ramps to SE North Bend Way.	An 8-foot-wide paved shoulders or curb, gutter and sidewalk would be constructed along 468th Avenue SE from the I-90 ramps to SE North Bend Way.	

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
TRANSPORTATION (Continued)				
Additional Recommended Mitigation Measures	No mitigation	Install signal at 468th Avenue SE intersections with SE 146th Street	Improve SE Grouse Ridge Road, including widening and realignment	Improve SE Grouse Ridge Road, including widening and realignment
		Require a truck turning template analysis at the southeast corner of the 468th Avenue SE intersection with SE 146th Street	Improve SE Homestead Valley Road, including bridge widening, shoulders, and overlay	Improve SE Homestead Valley Road, including bridge widening, shoulders, and overlay
		Develop a monitoring plan along the 468th Avenue SE corridor to determine the need for following future improvements: 1) signal at I-90/468th Avenue SE eastbound ramp; 2) right-turn lane on SE North Bend Way at 468th Avenue SE	At bridge over Snoqualmie River (SE Grouse Ridge Road), stop trucks before crossing one at a time.	At bridge over Snoqualmie River (SE Grouse Ridge Road), stop trucks before crossing one at a time
		Improve signs and pavement marking at existing crossing locations on 468th Avenue SE and SE 146th Street	Install a signal at 468th Avenue SE intersection with 146th Street	
		Install a street light system from I-90 through the required channelization improvements along 468th Avenue SE	Require a truck turning template analysis at the southeast corner of the 468th Avenue SE intersection with SE 146th Street	
		Restrict truck traffic from the Lower Site to use only SE 146th Street and 468th Avenue SE between SE 146th Street and the I-90 Exit 34 ramps with the exception of trucks making local deliveries	Develop a monitoring plan along the 468th Avenue SE corridor to determine the need for following future improvements: 1) signal at I-90/468th Avenue SE eastbound ramp; 2) right-turn lane on SE North Bend Way at 468th Avenue SE	
		Pay MPS fees for King County-planned improvement projects	Improve signs and pavement marking at existing crossing locations on 468th Avenue SE	
			Street light system should be installed from I-90 through the required channelization improvements along 468th Avenue SE	
			Restrict truck traffic from the Lower Site to use only SE 146th Street and 468th Avenue SE between SE 146th Street and the I-90 Exit 34 ramps with the exception of trucks making local deliveries	
			Pay MPS fees for King County planned improvement projects	
Significant Unavoidable Impacts	None	None	None	None

TABLE 1-2 (CONTINUED)
SUMMARY OF IMPACTS

	Alternative 1– No Action	Alternative 2–Proposal: Lower and Upper Sites Mining (Exit 34)	Alternative 3–Lower and Upper Sites Mining (Exits 34 and 38)	Alternative 4–Upper Site Mining (Exit 38)
ENVIRONMENTAL HEALTH				
Construction Impacts	No impacts	Potential spills from machinery and storage tanks	Potential spills from machinery and storage tanks	Potential spills from machinery and storage tanks
Operation impacts	No impacts	Potential spills from storage and handling of fuels and chemicals at Lower and Upper Sites	Potential spills from storage and handling of fuels and chemicals, although less at Lower Site and more at Upper Site than for Alternative 2	Potential spills from storage and handling of fuels and chemicals at Upper Site only
		Potential transport of nutrients and metals into surface water, soil or groundwater from overuse of biosolids (e.g., GroCo)	Potential transport of nutrients and metals into surface water, soil or groundwater from overuse of biosolids (e.g., GroCo)	Potential transport of nutrients and metals into surface water, soil or groundwater from overuse of biosolids at Upper Site only (e.g., GroCo)
Cumulative impacts	No impacts	No impacts	No impacts	No impacts
Mitigation Measures Included in Project Design	No mitigation	An additional monitoring well would be installed downgradient of processing area	An additional monitoring well would be installed downgradient of processing area	No mitigation
Additional Recommended Mitigation Measures	No mitigation	Emphasize importance of surface water protection and proper chemical handling procedures in employee training	Emphasize importance of surface water protection and proper chemical handling procedures in employee training	Emphasize importance of surface water protection and proper chemical handling procedures in employee training
		Include hazardous substances to be used on Upper Site in baseline water quality monitoring for springs	Include hazardous substances to be used on Upper Site in baseline water quality monitoring for springs	Include hazardous substances to be used on Upper Site in baseline water quality monitoring for springs
		Analyze groundwater for chemicals and petroleum products stored onsite	Analyze groundwater for chemicals and petroleum products stored onsite	Analyze groundwater for chemicals and petroleum products stored onsite
		Develop site specific agronomic application rate for GroCo if this soil amendment is used	Develop site specific agronomic application rate for GroCo if this soil amendment is used	Develop site specific agronomic application rate for GroCo if this soil amendment is used
		Develop land application plan for GroCo if GroCo would be applied in greater than agronomic rates	Develop land application plan for GroCo if GroCo would be applied in greater than agronomic rates	Develop land application plan for GroCo if GroCo would be applied in greater than agronomic rates
		Analyze groundwater for nitrates if GroCo or fertilizers are used	Analyze groundwater for nitrates if GroCo or fertilizers are used	Analyze groundwater for nitrates if GroCo or fertilizers are used
Significant Unavoidable Adverse Impacts	None	None	None	None